

REMARKS

I. Introduction

Claims 14, 15, 17 to 24, and 26 to 28 are pending in the present application. In view of the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Rejection of Claims 14, 15, 17 to 24, And 26 to 28 Under 35 U.S.C. § 102(e)

Claims 14, 15, 17 to 24, and 26 to 28 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,684,742 ("White"). It is respectfully submitted that White does not anticipate the present claims for at least the following reasons.

As an initial matter, the statement of rejection is entirely deficient and fails to comply with the requirements of, for example, 37 C.F.R. § 1.104(a)(2), which requires that "[t]he reasons for any adverse action or any objection or requirement **will be stated** in an Office Action and such information or references **will be given** as may be useful in aiding the applicant . . . to judge the propriety of continuing the prosecution," (emphasis added), and 37 C.F.R. § 1.104(b)(2), which requires that "[t]he pertinence of each reference, if not apparent, **must be clearly explained** and each rejected claim specified," (emphasis added). In support of the present rejection, the Office Action merely contends at page 2 that "White discloses all of the subject matter set forth in the claims and the method as presented" and merely refers to claims 5 and 6 of White as disclosing dependent claims 17 to 22, which in no manner complies with the requirements of 37 C.F.R. § 1.104 and certainly fails to set forth a prima facie case of anticipation for which the **Office** bears the burden. Ex parte Skinner, 2 U.S.P.Q.2d 1788, 1788 to 1789 (Bd. Pat. App. & Inter. 1986) ("It is by now "well settled that the burden of establishing a prima facie case of anticipation resides with the [United States] Patent and Trademark Office.""). Notwithstanding the foregoing, it is respectfully submitted that White does not anticipate the present claims for the following additional reasons.

To anticipate a claim, each and every element as set forth in the claim must be found in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Furthermore,

“[t]he identical invention must be shown in as complete detail as is contained in the . . . claim.” Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). That is, the prior art must describe the elements arranged as required by the claims. In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). In other words, to be anticipatory, a single prior art reference must show all of the limitations of the claims arranged or combined in the same way as recited in the claims. Net Moneyin, Inc. v. Verisign, Inc., 545 F.3d 1359 (Fed. Cir. 2008).

Claim 14 recites a method that includes, producing one of (a) first cutting paths and (b) ancillary cutting paths with a spherical cutter having a tool head radius corresponding to a tool shank radius, and producing second cutting paths for the cutting tool from the one of (a) the first cutting paths and (b) the ancillary cutting paths, and cutting freeform surfaces on a workpiece by a cutting tool to achieve a desired freeform surface, the cutting tool including a tool head and a tool shank, the tool head having a greater radius than the tool shank, the cutting including moving the cutting tool along at least one defined cutting path relative to the workpiece.

Claim 14, as well as its dependent claims, are generally concerned with producing **actual** (e.g. primary) cutting paths for a primary cutting tool, **from** first (e.g. ancillary) cutting paths that were **previously** produced with a **spherical cutter**.

In contrast, White is concerned with calculating an **initial tool position** by, for example, matching the curvature of the surface to the curvature of the cutting tool, or by positioning the cutter where the efficiency would be maximum (generally at the location on the cutting edge having maximum radius of curvature) and then rotating the cutter until local gouging is eliminated (see, e.g., columns 5 to 11 of White). White is absolutely **silent** as to the production of first or ancillary cutting paths by a spherical cutter, as well as the production of second cutting paths from the first or ancillary cutting paths, for the primary cutter.

As such, it is respectfully submitted that White does not disclose, or even suggest, all of the features included in claim 14. Consequently, it is respectfully submitted that White does not anticipate claim 14, or claims 15 and 17 to 22, which depend from claim 14

Moreover, the only citation provided by the Office Action is to claims 5 and 6 of White. However, the assertion that claims 5 and 6 allegedly disclose claims

17 to 22 is based on a misapprehension or misunderstanding of either claims 5 and 6 of White or claims 17 to 22 of the present invention, or both.

In this regard, claims 5 and 6 of White recite:

5. A method for shaping a workpiece using the tool of claims 1, 2, or 3 said method comprising the steps of:
(a) Identifying the desired shape of said workpiece;
(b) Selecting said tool to shape workpiece;
(c) Moving said tool across said workpiece so that said tool creates desired shape of said workplace.

6. A method for shaping a workpiece using the tool of 4, said method comprising the steps of:
(a) Identifying the desired shape of said workpiece;
(b) Selecting said tool to shape workpiece;
(c) Moving said tool across said workpiece so that said tool creates desired shape of said workpiece.

Any review of the foregoing claims makes perfectly clear that White does not disclose, or even suggest, all of the features of any of claims 17 to 22 of the present application.

For example, claims 5 and 6 of White do not disclose, or even suggest, all of the features of claim 17 of the present application, which recites:

17. The method according to claim 14, wherein each first cutting path includes a plurality of support points.

Furthermore, claims 5 and 6 of White do not disclose, or even suggest, all of the features of claim 18 of the present application, which recites:

18. The method according to claim 17, wherein the cutting includes producing normal vectors of a workpiece surface for each support point of the one of (a) the first cutting paths and (b) the second cutting paths.

Furthermore, claims 5 and 6 of White do not disclose, or even suggest, all of the features of claim 19 of the present application, which recites:

19. The method according to claim 18, wherein the second cutting paths are produced in the second cutting points producing step by shifting the support points of the first cutting paths relative to corresponding normal vectors.

Moreover, claims 5 and 6 of White do not disclose, or even suggest, all of the features of claim 20 of the present application, which recites:

20. The method according to claim 19, wherein the support points are shifted in the shifting step by a difference between the radius of the tool head of the spherical cutter and the radius of the tool head of the cutting tool.

Furthermore, claims 5 and 6 of White do not disclose, or even suggest, all of the features of claim 21 of the present application, which recites:

21. The method according to claim 14, wherein the cutting includes defining the radius of the tool head of the spherical cutter, a radius center point of the tool head of the spherical cutter, the radius of the tool head of the cutting tool and a radius center point of the tool head of the cutting tool in a tool coordinate system, an original of the tool coordinate system corresponding to a tool reference point in which an axis of the cutting tool intersects on end of the tool head.

Finally, claims 5 and 6 of White do not disclose, or even suggest, all of the features of claim 22 of the present application, which recites:

22. The method according to claim 21, wherein the second cutting paths are produced in the second cutting paths producing step by shifting support points of the first cutting path by a difference between the radius of the spherical cutter and the radius of the cutting tool by coordinates of corresponding radius center points.

Based on the foregoing, it is readily apparent that White fails to disclose, or even suggest, all of the features of any of claims 17 to 22.

Claim 23 recites that a cutting tool, for cutting freeform surfaces on a workpiece, includes a tool shank, and a tool head, wherein a radius of the tool head is greater than a radius of the tool shank and smaller than a smallest radius of curvature of the freeform surface.

Nowhere, does White disclose, or even suggest, that a radius of a tool head is **smaller than a smallest radius of curvature of a freeform surface**. White merely discusses radius of curvature with respect to the **tool** itself, not a **freeform surface** (see, e.g., col. 4, lines 47 to 60 of White). It is, therefore, respectfully submitted that White does not disclose, or even suggest, all of the features included

in claim 23. Consequently, it is respectfully submitted that White does not anticipate claim 23, or claims 24 to 26, which depend from claim 23.

Claim 27 recites that a method includes manufacturing a rotationally symmetric component by cutting a workpiece with a cutting tool, the cutting tool including a tool shank and a tool head, a radius of the tool head greater than a radius of the tool shank and smaller than a smallest radius of curvature of the freeform surface.

As mentioned above with respect to claim 23, White does not disclose, or even suggest, that a radius of the tool head is smaller than a smallest radius of curvature of a freeform surface. It is, therefore, respectfully submitted that White does not disclose, or even suggest, all of the features included in claim 27. Consequently, it is respectfully submitted that White does not anticipate claim 27, or claim 28, which depends from claim 27.

Further with respect to claims 24 and 28, the Office Action's reference to an intended use is not -- and cannot be -- understood. In this regard, claim 24 recites that "the cutting tool is arranged as a five-axis cutting tool," and claim 28 recites that "the rotationally symmetric component includes one of (a) a disk-shaped component, (b) a ring-shaped component and (c) a rotor disk having integrated blading." It is entirely unclear what aspect of these claims is or might be considered a statement of intended use.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

III. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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